

ASSIGNMENT 3

Textbook Assignment: "Automotive Clutches, Transmissions, and Transaxles," chapter 4, pages 4-1 through 4-44.

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| <p>3-1. What device is designed to disconnect the engine from the power train?</p> <ol style="list-style-type: none">1. Universal joint2. Transfer case3. Clutch4. Differential | <p>3-5. What clutch component can either engage or disengage the clutch disc and flywheel?</p> <ol style="list-style-type: none">1. Pressure plate2. Release bearing3. Clutch housing4. Clutch fork |
| <p>3-2. What component provides the operator the means with which to operate the clutch assembly?</p> <ol style="list-style-type: none">1. Throw-out bearing2. Clutch release mechanism3. Clutch fork4. Pressure plate | <p>3-6. What component of the clutch disc absorbs vibration and shock produced by clutch engagement?</p> <ol style="list-style-type: none">1. Facing springs2. Cushioning springs3. Torsion springs4. Friction springs |
| <p>3-3. The clutch fork transfers motion from the release mechanism to what components?</p> <ol style="list-style-type: none">1. The clutch linkage and release bearing2. The clutch slave cylinder and pressure plate3. The pressure plate and clutch disc4. The release bearing and pressure plate | <p>3-7. The flat metal springs, located under the friction lining of the disc, allow for smooth engagement of the clutch. These springs are known by which of the following terms?</p> <ol style="list-style-type: none">1. Damping2. Torsion3. Friction4. Cushioning |
| <p>3-4. The release bearing is held on the clutch fork by</p> <ol style="list-style-type: none">1. setscrews2. spring clips3. hydraulic pressure4. grooves cut into the release bearing | <p>3-8. Which of the following clutch components prevents the transmission from wobbling up and down when the clutch is released?</p> <ol style="list-style-type: none">1. Pilot bearing2. Release bearing3. Diaphragm pressure plate4. Clutch release mechanism |

- 3-9. Which of the following safety devices prevents the engine from starting unless the clutch pedal is fully depressed?
1. Clutch start switch
 2. Transmission safety switch
 3. Engine failsafe switch
 4. Neutral safety switch
- 3-10. How is a hydraulically operated clutch adjusted?
1. By turning the eccentric cam in the clutch pedal support
 2. By shortening and lengthening the slave cylinder pushrod
 3. By lengthening the effective stroke of the piston of the master cylinder
 4. By bleeding off a small amount of fluid. at the slave cylinder
- 3-11. You are in the field and no manuals are available. What amount of clutch pedal free travel will allow for adequate clutch operation until the vehicle reaches the shop?
1. 1 inch
 2. 2 inches
 3. 1 1/2 inches
 4. 4 inches
- 3-12. What is the most common cause of premature clutch troubles?
1. Operator abuse
 2. Misaligned transmission
 3. Over lubrication
 4. Stop-and-go traffic
- 3-13. Which of the following conditions will result in the clutch slipping?
1. Loose spring shackles
 2. Bent crankshaft flange
 3. Loose transmission mount
 4. Broken motor mount
- 3-14. An operator reports that a vehicle has a severe vibration when accelerated from a standstill. What is the most likely cause of this trouble?
1. Excessive free play
 2. Broken disc facing
 3. Bent release levers
 4. Worn release bearing
- 3-15. An operator reports hearing rattling sounds when the clutch is engaged. This condition is generally due to which of the following problems?
1. Worn pilot bearing
 2. Worn clutch disc facing
 3. A broken clutch disc torsion spring
 4. A broken clutch release mechanism
- 3-16. A pilot bearing that is worn or lacks lubricant will produce noise in the clutch when which of the following conditions exists?
1. The transmission is in gear
 2. The clutch is disengaged
 3. The vehicle is standing still
 4. The clutch is engaged

3-17. An operator reports that a vehicle has "clutch-pedal pulsation." A mechanic should know that this means that

1. slippage between the clutch disc facing and the flywheel is being sensed through the clutch pedal
2. the clutch has a strong jerk that is being sensed through the clutch pedal
3. a series of slight movements can be felt on the clutch pedal when the clutch is being disengaged
4. there must be dirt or grease on the clutch facings

3-18. Clutch-pedal pulsation can NOT be caused by which of the following conditions?

1. Misalignment of the engine and transmission
2. The flywheel not being seated on the crankshaft flange
3. A warped pressure plate or clutch disc
4. Excessive clutch pedal free play

3-19. When disassembling a clutch, you should take what action before removing the pressure plate?

1. Relieve the tension on the pressure plate springs
2. Check the thickness of the clutch disc
3. Loosen the flywheel mounting bolts
4. Mark the pressure plate cover and flywheel

3-20. When overhauling a clutch, you should NOT inspect the pressure plate and flywheel for which of the following conditions?

1. Thickness
2. Cracks
3. Scoring
4. Warpage

3-21. Which of the following tool(s) are used to measure the amount of wear of a pilot bearing?

1. Inside caliper
2. Outside caliper
3. Telescoping gauge and micrometer
4. Thickness gauge and sliding scale

3-22. A clutch release bearing is running roughly. What action should the mechanic take?

1. Clean the bearing with solvent
2. Disassemble the bearing and smooth any rough areas
3. Repack the bearing with lubricant
4. Replace the bearing

3-23. What is the maximum number of adjustments on a pressure plate before installation?

1. One
2. Two
3. Three
4. Four

- 3-24. The pressure plate adjustment that positions the release levers and allows the release bearing to contact the levers simultaneously is known by which of the following terms?
1. Clearance height
 2. Relation height
 3. Finger height
 4. Free height
- 3-25. You are reassembling a clutch assembly and a clutch alignment tool is NOT available. You can center the clutch disc on the flywheel by using
1. an old clutch shaft from the same type of vehicle
 2. a wooden dowel the same size as the pilot bearing
 3. a pry bar to move the clutch disc up and down
 4. measured spacers to provide exact centering
- 3-26. What component provides a selection of gear ratios so a vehicle can operate under a variety of operating conditions and loads?
1. The transmission
 2. The differential
 3. The transfer case
 4. The final drive
- 3-27. In a manual transmission, what shaft is locked in place within the transmission case?
1. Input
 2. Reverse idler
 3. Countershaft
 4. Main
- 3-28. What are the four gear groups in a manual transmission?
1. Countershaft gears, input gear, output gear, and reverse idler gear
 2. Main shaft gears, output gear, synchronized gears, and reverse idler gear
 3. Input gear, countershaft gears, main shaft gears, and reverse idler gear
 4. Reverse gear, main shaft gears, countershaft gears, and output gear
- 3-29. Of the following functions, which one is a function of the synchronizer in a manual transmission?
1. Provides the operator an easy means of shifting gears
 2. Locks the main shaft gear to the main shaft
 3. Increases torque going to the drive wheels for quick acceleration
 4. Completes the power flow from the transmission to the drive wheels
- 3-30. What are the two types of shifting linkages used on manual transmissions?
1. External shift cable and internal shift rod
 2. Internal shift rod and external shift rail
 3. Internal shift cable and external rod
 4. External rod and internal shift rail

- 3-31. When the gears are shifted, what type of transmission locks the gears to their shafts using sliding collars?
1. Sliding gear
 2. Constant mesh
 3. Auxiliary
 4. Synchromesh
- 3-32. What is the function of the synchronizer in a synchromesh transmission?
1. To engage the main drive gear with the transmission main shaft
 2. To engage the first speed main shaft with the transmission main shaft
 3. To equalize the speed of the driving and driven members
 4. To engage the second speed main shaft with the transmission main shaft
- 3-33. The only function of the reverse gear in a synchromesh transmission is to
1. make the main shaft rotate in the opposite direction to the input shaft
 2. make the countershaft rotate in the opposite direction to the input shaft
 3. make the reverse idler shaft rotate in the opposite direction to the input shaft
 4. make the main shaft and reverse idler shaft rotate in the same direction to the input shaft
- 3-34. The reverse gear in a synchromesh transmission does NOT affect the gear ratio.
1. True
 2. False
- 3-35. What component of an auxiliary transmission is splined to the main shaft and slides backwards or forwards when shifting into high or low positions?
1. Synchronizer
 2. Gear type of dog clutch
 3. Over-center dog clutch
 4. High-lo shift fork
- 3-36. Which of the following conditions will result in a transmission being hard to shift?
1. Excessive countershaft end play
 2. Lack of spring tension on the shift lever detent
 3. Defective synchronizer
 4. Shift linkage out of adjustment
- 3-37. A clutch that is NOT releasing will cause a transmission to
1. make noise in neutral
 2. make noise in gear
 3. stick in gear
 4. slip out of gear
- 3-38. When disassembling a manual transmission, you find brass-colored particles. What components are most likely damaged?
1. The main drive gears
 2. The thrust washers
 3. The input shaft bearing
 4. The reverse idler shaft sleeve

- 3-39. When replacing a main shaft gear, you should also replace the matching gear on what shaft?
1. Countershaft
 2. Reverse idler
 3. Input
 4. Output
- 3-40. You have completed reassembling a transmission. Which of the following actions should you take before reinstalling the transmission?
1. Fill the case with proper lubricate
 2. Ensure the transmission shifts properly
 3. Measure end play clearance of the countershaft
 4. Lightly coat all components with a medium-grade lubricating oil
- 3-41. Operator control of an automatic transmission is limited to what action?
1. Changing the throttle position to match the load requirements of the vehicle
 2. Coupling and uncoupling the engine and automatic transmission through the torque converter
 3. Moving the control lever to select the gear range
 4. Locking the planetary gearsets to produce the required forward and reverse gear ratios
- 3-42. What action within an automatic transmission allows the transmission to shift gear ratios without operator control?
1. Locking and releasing of planetary gearsets in various combinations
 2. Locking and unlocking of hydraulic actuated multiple-disc clutches
 3. Controlling the hydraulic pressure that locks and releases brake bands
 4. Engaging and disengaging of the torque converter from the engine
- 3-43. In a torque converter, what component is known as the converter pump?
1. Stator
 2. Impeller
 3. Turbine
 4. Drive fan
- 3-44. The turbine of a torque converter is connected to what component?
1. Flywheel
 2. Crankshaft
 3. Transmission
 4. Clutch housing
- 3-45. The blades inside a torque converter are forced to rotate by
1. oil thrown by the pump
 2. centrifugal force generated by the clutch
 3. engine torque transmitted through the crankshaft
 4. pressure from the flywheel

- 3-46. In a torque converter, what action causes torque multiplication to occur?
1. The impeller is spinning faster than the turbine
 2. The impeller is spinning slower than the stator
 3. The turbine is spinning faster than the impeller
 4. The turbine is spinning slower than the stator
- 3-47. The condition that exists when the impeller of a torque converter is at maximum speed and the turbine is almost stationary is known by what term?
1. Torque speed
 2. Engine speed
 3. Acceleration speed
 4. Stall speed
- 3-48. What component locks the stator of a torque converter when the impeller is turning faster than the turbine?
1. Dog clutch
 2. One-way clutch
 3. Over-center clutch
 4. Multi-disc clutch
- 3-49. What type of torque converter eliminates the heat caused by torque converter slippage which results in increased fuel economy and transmission life?
1. Antislip
 2. Hydraulic
 3. Direct
 4. Lockup
- 3-50. What component of a lockup torque converter assists in dampening engine pulses entering the drive train?
1. Cushioning springs
 2. Facing springs
 3. Torsion springs
 4. Leaf springs
- 3-51. Of the following gears, which one is NOT a part of the makeup of the planetary gearset?
1. Sun
 2. Ring
 3. Planetary carrier
 4. Input
- 3-52. What gear is the center gear in a planetary gearset?
1. Planet pinion
 2. Ring
 3. Sun
 4. Planetary carrier
- 3-53. What component of an automatic transmission is used to transmit torque by locking elements of the planetary gearsets to rotating members within the transmission?
1. Over-center clutch
 2. Multiple-disc clutch
 3. One-way clutch
 4. Dog clutch

- 3-54. What component of a multiple-disc clutch is used to distribute application pressure equally on the surfaces of the clutch discs and plates?
1. Clutch hub
 2. Pressure plate
 3. Clutch drum
 4. Clutch springs
- 3-55. What component of a multiple-disc clutch ensures a rapid release of the clutch when hydraulic pressure to the clutch piston is released?
1. Clutch springs
 2. Clutch hub
 3. Clutch drum
 4. Pressure plate
- 3-56. What component of an automatic transmission is designed to lock a planetary gearset element to the transmission case so the element can act as a reactionary member?
1. Brake band
 2. Multiple-disc clutch
 3. Servo
 4. Valve body
- 3-57. Of the following functions, which one is NOT a basic function of the hydraulic system of an automatic transmission?
1. Actuate clutches and bands
 2. Control shifting patterns
 3. Circulate transmission fluid
 4. Control the planetary gearset elements
- 3-58. So it can be driven by the engine, the hydraulic pump of an automatic transmission is keyed to what component?
1. Transmission case
 2. Flywheel
 3. Torque converter hub
 4. Engine crankshaft
- 3-59. Of the following functions, which one is NOT a function of the hydraulic pump of an automatic transmission?
1. To produce pressure to operate the clutches
 2. To lubricate the moving parts of the transmission
 3. To keep the torque converter filled
 4. To route excess transmission fluid to the cooling tank
- 3-60. What valve in an automatic transmission is operated by the shift mechanism, allowing the operator to select park, neutral, reverse, or different drive ranges?
1. Manual
 2. Kickdown
 3. Governor
 4. Shift
- 3-61. What component works in conjunction with the vacuum modulator to determine shift points in an automatic transmission?
1. Manual valve
 2. Kickdown valve
 3. Governor valve
 4. Shift valve

- 3-62. What valve causes the transmission to shift into a lower gear during quick acceleration?
1. Kickdown
 2. Governor
 3. Shift
 4. Manual
- 3-63. In addition to giving off a burnt smell, overheated transmission fluid will turn what color?
1. Brown
 2. Black
 3. Red
 4. Blue
- 3-64. Using a transmission fluid that is incompatible with the unit you are working on may lead to which of the following problems?
1. The transmission overheating
 2. The transmission fluid foaming
 3. A milky appearance of the fluid
 4. An early transmission failure
- 3-65. Air trapped in the hydraulic system of an automatic transmission can cause which of the following problems?
1. High line pressure
 2. Slow application of the clutch plates
 3. Low torque output
 4. Hard shifting
- 3-66. Water mixed with automatic transmission fluid will turn the fluid what color?
1. Brown
 2. Milky
 3. Pink
 4. Tan
- 3-67. After a vehicle has been operated in severe service, the transmission will require a band adjustment.
1. True
 2. False
- 3-68. "Severe service" does NOT include which of the following conditions?
1. Construction operations
 2. Trailer towing
 3. Stop-and-go driving
 4. Contingency operations
- 3-69. Oil drained from an automatic transmission should be disposed of according to what instructions?
1. EPA
 2. Federal regulations
 3. Local civilian
 4. Local naval station
- 3-70. Which of the following factors is NOT an advantage of a vehicle with a transaxle and front-wheel drive?
1. Increased passenger compartment space
 2. Quieter operation
 3. Greater sprung weight
 4. Improved traction on slippery surfaces

3-71. In a manual transaxle the output shaft transfers torque to which of the following components?

1. Drive axles
2. Differential
3. Hub assembly
4. Gearbox

3-72. The flow of fluid to the pistons and servos of an automatic transaxle is controlled by what component?

1. Transaxle clutches and bands
2. Transaxle planetary gearsets
3. Transaxle differential
4. Transaxle valve body